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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of	)	
	)	
The Establishment of Policies	)	IB Docket No. 99-81
and Service Rules for the Mobile	)	RM-9328
Satellite Service in the 2 GHz Band	)	

COMMENTS OF INMARSAT LTD.

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Summary

Inmarsat believes that the best way to implement MSS in the 2 GHz band in a flexible and efficient manner, thereby promoting the greatest possible range of service offerings to the public, is through the adoption by the Commission of policies and rules that contain the following three elements:

- A flexible spectrum plan arrangement;
- A spectrum sharing proposal that harmonizes with 2 GHz MSS decisions already adopted in other parts of the world; and
- Post-authorization modification of spectrum assignments by means of periodic operators' review of the actual and projected spectrum needs of each operator.

Inmarsat believes that neither negotiated entry, traditional band assignment nor competitive bidding would meet the Commission's 2 GHz implementation goals. In keeping with Inmarsat's modified flexible spectrum plan approach, the Commission also should group proposed systems on the basis of their intended service areas, rather than on their GSO or NGSO design characteristics. Further, Inmarsat urges that any unused spectrum be returned to a common pool for redistribution among current applicants.

Inmarsat also opposes actions that would either delay the 2 GHz licensing process or else would encumber the spectrum bands with needless additional uses. To this end, Inmarsat urges the Commission not to link space segment assignments to pending feeder link issues. Further, the Commission should not authorize the provision of AMS(R)S in the band.

Inmarsat generally supports those aspects of the Commission's proposed service rules for 2 GHz MSS which are consistent with the goals of its spectrum assignment

policies, including its proposed regulatory classifications, license terms and implementation milestones. Inmarsat does not believe that a financial showing from current MSS applicants is necessary at this time.

Finally, with respect to international coordination issues, Inmarsat believes that the most expedient way for the Commission to ensure satisfactory global coordination of U.S. systems is through the assignment of spectrum in a manner which harmonizes with other such allotments around the world.

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To: The Commission

COMMENTS OF INMARSAT LTD.

Inmarsat Ltd. ("Inmarsat"), by counsel and pursuant to Section 1.415 of the Commission's Rules, hereby submits its comments in response to the Commission's Notice of Proposed Rulemaking in the above-captioned matter.[1] In general, Inmarsat supports many of the proposals put forth by the Commission in the NPRM and encourages the Commission to continue its efforts to implement Mobile Satellite Service ("MSS") in the 2 GHz spectrum band in a flexible and efficient manner, thereby promoting the greatest possible range of service offerings to the public. Inmarsat believes that the best way to achieve this is by adopting rules that contain the following three elements:

- A flexible spectrum plan arrangement;
- A spectrum sharing proposal that harmonizes with 2 GHz MSS decisions already adopted in other parts of the world; and
- Post-authorization modification of spectrum assignments by means of periodic operators' review of the actual and projected spectrum needs of each operator.

[1] Notice of Proposed Rulemaking, IB Docket No. 99-81, RM No. 9328, FCC 99-50 (released March 25, 1999)("NPRM").

Inmarsat's comments in this proceeding will be directed to specific proposals put forward by the Commission regarding service link and non-service link issues and service rules. In particular, appropriate rules governing application processing will be critical to promoting the Commission's goals.

I. BACKGROUND

Currently, nine parties seek authority from the Commission to use the 2 GHz spectrum for the provision of MSS. Inmarsat is one of three non-U.S. licensed systems, along with ICO Services Ltd. ("ICO") and TMI Communications and Company Limited Partnership ("TMI"), to file a letter of intent seeking reservation of spectrum to serve the U.S. market, pursuant to the Commission's implementation of the WTO Basic Agreement on Telecommunications through its *DISCO II* proceeding.[2] Inmarsat is pleased to be one of the first non-U.S. licensed service providers to seek access to the U.S. market under the new regime and to participate in the shaping of policies and service rules for the 2 GHz band.

II. DISCUSSION

A. Inmarsat Supports a Modified Flexible Band Plan

Inmarsat urges the Commission to adopt rules for the 2 GHz service links that will promote innovation, flexibility and efficiency. In this way, the Commission will allow service providers to bring the greatest number of competitive alternatives to the market, thereby benefiting the public. However, given the limits on available spectrum, Inmarsat

urges the Commission not to adopt rules that encumber the 2 GHz band with non-MSS applications, that lead to insurmountable problems of interference or that cause the spectrum to be assigned in a wasteful manner.

1. Inmarsat's Proposed Band Plan

Inmarsat generally supports the concept of segmenting the available spectrum into three core and two expansion spectrum bands, with each core band to be used by systems using similar technologies to commence operations and each expansion band to be used as a reserve.[3] In choosing the most efficient and equitable option or combination of options for the assignment of 2 GHz spectrum, Inmarsat believes that the following realities must be taken into account:

- All planned systems may not be implemented at the same time.
- It is not possible to accommodate all proposed 2 GHz systems if each system were to use the full amount of spectrum it has requested.
- In view of the spectrum scarcity, no amount of spectrum can be allowed to remain allocated to, but unused by, a system. In allocating spectrum, the Commission should be mindful that:
    - No system will need its ultimate spectrum requirement from day one.
    - No system can accurately predict its long term spectrum requirements.
    - Start-up spectrum for each system to accommodate its initial operations must be identified.
    - Expansion spectrum to accommodate the growth of different systems must be available.

Inmarsat believes that the above elements must be incorporated into the Commission's decision-making process, thus providing some assurances to each system

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[2] Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Services in the United States, Report & Order, IB Docket No. 96-111, 12 FCC Rcd 24094 (1997)("*DISCO II*").

while promoting maximum flexibility. A flexible band arrangement appears to best take into account each of these points.

Inmarsat believes, however that the flexible band arrangement proposed by the Commission can be improved substantially in several ways. First, with respect to its specific proposed spectrum sharing arrangement,[4] the Commission must take into greater account the 2 GHz allocation decisions already adopted by the European Radiocommunications Committee ("ERC") for harmonized usage of this band in Europe.[5] To this end, attached hereto as Annex 1 is Inmarsat's own spectrum sharing arrangement proposal. This proposal follows exactly the same principles embraced by the Commission but simultaneously encourages greater continuity with the European decision by designating more spectrum for global systems in those portions of the 2 GHz MSS allocations common to Regions 1 and 2, while seeking to place non-global systems in that portion of the Region 2 allocation which is different. Inmarsat urges the Commission to work further with the ERC to adopt a common world-wide harmonized 2 GHz spectrum allocation plan. Such a plan would reduce problems caused by inconsistent regional allocation as noted below.

In addition to the initial spectrum sharing arrangement outlined above, Inmarsat believes that a periodic review of spectrum sharing arrangements by MSS operators is necessary to ensure that spectrum is assigned (or reassigned in the case of spectrum returned to the Commission through forfeiture) in the most efficient manner. The crucial elements of this process would be:

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[3] NPRM at ¶31.
[4] NPRM at ¶37.

- Validation of spectrum usage by each system in the current/previous period;
- Justification of the spectrum requirements forecast for each system for the following period; and
- Apportionment of expansion spectrum or readjustment of spectrum shares as necessary.

Under this scheme, the MSS operators, in addition to reviewing actual spectrum utilization by different operating systems, also would assess the progress made by different planned systems against the Commission's milestone review criteria in order to accommodate them with sufficient spectrum for their future needs. Again, the ERC has adopted a similar review process.

Thus, Inmarsat believes that adoption of a flexible plan arrangement as modified by Inmarsat's spectrum sharing proposal, coupled with periodic operator review of actual and anticipated spectrum use by each MSS operator, best serves the Commission's goals, accommodating the maximum number of systems while ensuring efficient use of spectrum.

Furthermore, Inmarsat's proposal would resolve a number of issues and objections raised by the Commission with respect to the flexible band arrangement proposal. First, the proposal would not "limit the ability of system operators to embrace new technologies when implementing their systems."[6] Inmarsat notes the wide variety of different types of multiple access and modulation techniques as well as orbital choices proposed by the nine system proponents. Augmentation of the Commission's basic flexible band arrangement by periodic review of spectrum requirements and use will

[5] ERC Decision of 30 June 1997 on the Harmonized Use of Spectrum for Satellite Personal Communications Services (S-PCS) Operating within the Bands 1610-1626.5 MHz, 2483.5-2500 MHz, 1980-2010 MHz and 2170-2200 MHz, ERC/DEC/(97) 03.
[6] NPRM at ¶39.

provide the flexibility necessary to preserve and encourage the use of new technologies as they are developed. Second, Inmarsat believes its proposal would aid the Commission in adopting a transitional relocation policy for incumbent licensees.[7] Given that both MSS terminals and ENG transmitters have some flexibility in terms of being able to operate across the entire band, periodic review of spectrum use would allow, for example, gradual expansion of MSS operations in spectrum segments being vacated by their current incumbent users. Similarly, Inmarsat does not believe that the flexible band arrangement would prevent adoption of the kind of relocation policies advocated by Inmarsat with respect to FS systems in the 2165-2200 MHz band.[8] Indeed, a flexible plan would allow MSS operators greater latitude in terms of temporary spectrum assignments during the transition period.

Finally, in response to the Commission's inquiry whether guard bands are necessary under the flexible band arrangement,[9] Inmarsat is of the opinion that identification of such guard bands at this stage is unnecessary. The amount of interference that a system's user terminal receivers can receive from the adjacent band system's user terminal transmitter would depend on the spurious emissions of that terminal, the sensitivity of the receiver and the frequency separation from the band edges. The need for guard bands, if any, should be identified bilaterally between the operators of the two systems.

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[7] Id.

[8] See Comments of Inmarsat, ET Docket No. 95-18 (January 18, 1999).

2. Grouping of GSO and NGSO Systems

The Commission notes that portions of the 2 GHz MSS spectrum allocation are not uniformly available throughout the world.[10] Thus, certain of the Commission's processing options propose grouping GSO systems primarily in that portion of the 2 GHz band allocated for MSS only in Region 2.[11] This proposal is based on the assumption that GSO systems may be better suited than NGSO systems to operate in spectrum allocated on a regional basis because of the inherently restricted service area of a GSO satellite.[12]

While the Commission's reasoning may be sound with respect to the coverage area of a *single* GSO satellite (as proposed by TMI and Celsat),[13] Inmarsat is concerned that the Commission's rationale does not take into account the needs of systems providing *global* GSO service via multiple satellites, such as Inmarsat's. Like a number of NGSO system operators, Inmarsat intends to construct its satellites to a common set of technical specifications both in order to greatly decrease the cost of construction and operation, and to allow for interchangeability in the event of loss of service to one of them. However, if Inmarsat were assigned uplink spectrum in the 2010-2025 MHz range in Region 2 (as proposed, for example, under the Commission's traditional band arrangement),[14] while at the same time employing the 1980-2010 MHz range in Regions 1 and 3, it would be forced either to design all of its satellites to operate throughout both

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[9] NPRM at ¶38.
[10] NPRM at ¶28.
[11] Id.
[12] Id.
[13] NPRM at Appendix A.
[14] NPRM at ¶44.

uplink ranges,[15] or else to tailor each of its satellites separately in order to match the allocations for their service regions and forfeit interchangeability. In either case, the additional technical and financial burden placed on Inmarsat's system would be inequitable.

In short, the GSO or NGSO nature of a given satellite is not necessarily a relevant factor in terms of spectrum assignment. Rather, the Commission must look to the service area of each *system,* whether regional or global, in order to properly identify issues of compatibility and determine the appropriate spectrum assignment

Inmarsat supports the Commission's proposal to authorize both geostationary and nongeostationary MSS systems in the relevant portions of the 1990-2025/2165-2200 MHz bands.[16] As the Commission notes, such a policy would provide an opportunity for the relative technical advantages and disadvantages of each type of system to be tested in the marketplace.[17] Further, Inmarsat notes that the ITU Radio Regulations do not restrict the usage of any space service frequency bands to systems of any particular type of orbit. The only condition to which all satellite systems are subject is that of satisfactory frequency coordination according to the established coordination procedures. Thus, as long as both GSO and NGSO systems can be coordinated through band segmentation between these incompatible types of systems, the Commission should authorize both.

With respect to coverage requirements for GSO systems, Inmarsat supports the Commission's proposal to require such systems to provide coverage to all 50 states,

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[15] Although it is theoretically possible for GSO satellites in the same system operating in different regions to use different parts of the spectrum, the costs and technical difficulties associated with onboard digital processing of such large amounts of bandwidth in a common design are enormous.

[16] NPRM at ¶17.

[17] Id.

Puerto Rico and the U.S. Virgin Islands unless the applicant demonstrates that such coverage is not technically feasible.[18]

3. Unused Spectrum

The Commission also candidly recognizes that not all authorized systems will be built and placed into service.[19] It therefore seeks comment on how unused spectrum, as determined by failure to meet milestones, should be treated. Specifically, it asks whether such spectrum should be apportioned in some way among the remaining current applicants or whether additional applications from new entities should be accepted in a subsequent processing round.[20]

Consistent with the approach outlined above, Inmarsat believes that unused spectrum should be available to current applicants through the periodic review process we propose. Based on the system proponents' spectrum requests, there is insufficient spectrum to accommodate all systems as proposed without causing mutual interference. Allowing additional applicants into a further processing round will only exacerbate this problem. In contrast, allowing successful operators to use the unused portion of the band when it becomes available will promote a competitive MSS industry. Thus, the main purpose of the milestone requirements must surely be to reassign spectrum from those current applicants who will not use it to those who will. In the event an applicant forfeits its spectrum through failure to meet a milestone, Inmarsat believes that such spectrum should be returned to a common pool, to be reassigned among the remaining entities who have implemented or are in the process of implementing their systems by means of the periodic multilateral review process as described above. Under this system, Inmarsat

[18] NPRM at ¶18.
[19] NPRM at ¶29.

believes there would be no need for a second processing round. Only in the event that each current applicant is fully accommodated should the Commission consider additional applications for any excess spectrum.

B. Other Proposed Options Would Fail to Achieve the Commission's Goals

1. Negotiated Entry

The Commission also seeks comment on the so-called negotiated entry approach.[21] Essentially, it proposes to issue conditional authorizations to all qualified entities to provide service anywhere in the 2 GHz band allocation. The authority would be conditioned on negotiations among the system proponents as to which frequencies each system would utilize as well as technical coordination among systems with respect to operating parameters to ensure that no harmful interference would be caused to other authorized systems.

Certainly, negotiated entry would appear to allow for maximum flexibility among the applicants. Were spectrum plentiful or were there only a few applicants, this approach might have some validity. However, the Commission has long experience of the complexities associated with implementing multiple MSS systems in an environment of limited spectrum availability.[22] Given the number of applicants and the spectrum limits at issue here, it is likely that such complexities would be multiplied significantly, to the detriment of the service. At best, it is conceivable that one or two early entrants could achieve tremendous strategic advantage by gaining spectrum for themselves and then thwarting or delaying the entrance of additional competitors. At worst, negotiation and

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[20] Id.
[21] NPRM at ¶40 et seq.
[22] See, e.g., Notice of Proposed Rulemaking, In the Matter of Establishing Rules and Policies For the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-Band, 11 FCC Rcd. 11675 (1996).

coordination among the applicants could lead to hopeless deadlock and spectrum paralysis.

The Commission appears to recognize the pitfalls associated with this approach by seeking comment on a proposal to provide each system a guaranteed amount of spectrum to which it would be entitled upon commencement of service.[23] The Commission also asks whether it should divide the band between CDMA/TDMA modulation schemes or GSO/NGSO orbital configurations in order to aid the coordination process. [24] Inmarsat believes such proposals merely transform the negotiated entry approach into a less refined and weaker version of the flexible band arrangement option.

2. Traditional Band Approach

The Commission also seeks comment on a proposal to provide specific spectrum for each qualified system.[25] Inmarsat believes that this plan would suffer from the total lack of any flexibility whatsoever. Such a loss would be extremely detrimental to the service, especially given the uncertainties associated with cost-intensive implementation and long-term system requirements. The Commission notes the disadvantages of such a 'rigidly structured approach' in the NPRM and asks whether allowing for some adjustments, subject to coordination with all affected parties, would be warranted.[26] Again, however, Inmarsat believes that the Commission's instinct to avoid such rigidity ultimately leads back to the flexible band arrangement option. Inmarsat would therefore suggest that the Commission reject the traditional band arrangement option.

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[23] NPRM at ¶42.
[24] Id.
[25] NPRM at ¶44.
[26] NPRM at ¶45.

3. Competitive Bidding

Finally, the Commission seeks comment on a general spectrum auction design to be employed in the event that it determines, based on the record, that the public interest would best be served through the assignment of frequencies by competitive bidding.[27] Inmarsat strongly believes that spectrum auctions simply cannot be employed in cases where service is proposed on a regional or global basis. Satellite and earth station transmissions do not respect geographical boundaries and that system operators must win approval from not just one, but many administrations. Imposition of auction requirements by one or more administrations would have the effect of requiring a system operator (assuming it can successfully win each auction) to pay for using the same spectrum over and over again all round the globe. At best, if an operator succeeded in piecing together a global system, service prices would be driven prohibitively high. What is more likely, however, is that global deployment would be impossible. Spectrum auctions for satellite services thus would threaten the very survival and viability of the proposed systems and should not be considered by the Commission.

C. The Commission Should Not Authorize the Provision of AMS(R)S at 2 GHz

The Commission also seeks comment on the feasibility of providing Aeronautical Mobile-Satellite Route Service ("AMS(R)S") services in the 2 GHz band, although it declines to propose any rule changes at this time to accommodate the proposal of Boeing to provide such service.[28] Inmarsat opposes the introduction of AMS(R)S in the 2 GHz band. Even if the absence of a specific AMS(R)S allocation does not bar the provision of

[27] NPRM at ¶46.
[28] NPRM at ¶20 et seq.

AMS(R)S in the MSS bands, as asserted by Boeing,[29] other factors must be taken into consideration. First, as noted by the Commission, there is neither domestic nor international regulatory provision for AMS(R)S in the 2 GHz band.[30] By comparison, Inmarsat notes the very strongly worded footnote to ensure priority and preemptive access for AMS(R)S in the allocation of the 1545-1555/1646.5-1656.5 MHz bands for MSS.[31] Without such strong regulatory support, coordination of 2 GHz AMS(R)S with other satellite operators and aviation administrations on a global basis would be extremely difficult, if not impossible.

Further, the Commission must take into account the existing fixed service ("FS") operations in the 2165-2200 MHz band. Inmarsat notes that the aggregate interference received by aircraft earth stations from FS transmitters operating in this band currently is so great that even public correspondence services cannot be provided satisfactorily. As has been discussed in earlier 2 GHz allocation rounds, MSS space to earth operations can share frequency with FS operators, thus suggesting that it may be some time before FS systems are transitioned out of the band.[32] Given this interference environment, introduction of AMS(R)S to this band is undesirable.

Finally, Inmarsat notes that the 2 GHz MSS allocation was intended primarily for third generation land mobile satellite applications, the projected demand for which may not even be satisfied by the current allocation. On the other hand, the Commission states that it is unaware of any specific international or domestic aviation community requirements for the band. Inmarsat urges the Commission not to take any action which

[29] NPRM at ¶21.
[30] Id.
[31] 47 C.F.R. §2.106 at footnote US308.

would only aggravate the problems of spectrum congestion without a clear public interest need to do so.

D. MSS Feeder Link Spectrum Issues

In addition to the 2 GHz spectrum employed for service links, each applicant has proposed the use of various segments of non-2 GHz spectrum for its system feeder links. The Commission seeks comment "as to what weight, if any, should be given to non-service link potential delaying factors in developing authorization for 2 GHz service links."[33] However, while the Commission raises some issues with respect to the suitability or availability of various requested feeder link bands, it also identifies a number of available alternative segments as well.[34] Thus, at least with respect to proposed GSO MSS systems, the Commission concludes that there is sufficient amount of feeder link spectrum to accommodate all such proposals.[35] Inmarsat agrees with this conclusion and would recommend that the 2GHz service rules be not impacted at all by non-service link matters.

With respect to Inmarsat's specific feeder link proposals, the Commission expresses the opinion that only 50 MHz of feeder down-link might be available in the United States owing to the reallocation of the 3650-3700 MHz band from FSS to FS service pursuant to an on-going proceeding.[36] Inmarsat continues to believe that it should be able to use the 3650-3700 MHz band for its feeder links without interfering with any terrestrial users. The Commission's proposal to curtail FSS service in this band has

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[32] See Comments of Inmarsat in Response to Third Notice of Proposed Rulemaking, ET Docket No. 95-18 (January 18, 1999).
[33] NPRM at ¶49.
[34] NPRM at ¶53.
[35] NPRM at ¶54.

received vigorous opposition and is not yet final.[37] Further, Inmarsat believes that its feeder link use of that spectrum is fully compatible with any new FS services in the band. The sharing feasibility of FSS down-links and FS is rather well established in the ITU-R 4/9 S Recommendations. Also, the fact the Inmarsat Horizons system may have only one or two Land Earth Stations ("LES") in the United States would make the terrestrial coordination eminently feasible. As a result, Inmarsat Horizons LESs will be able to access 100 MHz of feeder link spectrum from 3600-3700 MHz in the United States, which would allow Horizons to coordinate the necessary amount of feeder link frequencies for satisfactory operation in the United States.

E. Financial Qualifications

The Commission tentatively concludes that analysis of financial qualifications prior to licensing and spectrum reservation will not be necessary in the 2 GHz MSS processing round, given that it may be possible to accommodate all nine of the current proposed systems, if modified, without mutual interference.[38] Instead, the Commission would ensure timely construction of systems and deployment of services by imposing implementation milestones.[39]

Inmarsat generally supports the Commission's conclusion that enforcing strict milestones after licensing and spectrum reservation is the best way to ensure timely construction and deployment of the systems and thus promote the most efficient use of spectrum. However, Inmarsat urges the Commission to require a financial showing of

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[36] NPRM at ¶58, citing Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band, ET Docket No. 98-237, Notice of Proposed Rulemaking and Order, FCC 98-337 (released December 18, 1998).
[37] See, e.g., Comments of Comsat Corporation, ET Docket No. 98-237 (February 16, 1999).
[38] NPRM at ¶24.
[39] Id.

the type proposed in the NPRM[40] prior to licensing in the event that any spectrum limitations are placed on the applicants. Under such conditions, it becomes of paramount importance that the Commission be able to weed out any underfunded applicant or applicants whose continued presence would only serve to block better-qualified applicants from the opportunity to serve the public.

F. Service Rules

Finally, Inmarsat offers the following comments with respect to various service rules proposed for the 2 GHz service by the Commission.

1. Regulatory Treatment

Inmarsat supports the Commission's proposal to regulate the space segment of the 2 GHz MSS on a non-common carrier basis.[41] Inmarsat believes that the competition amongst the several MSS proponents will ensure that the services will be provided efficiently at reasonable prices, and thus that there is no need for the Commission to impose common carrier requirements pursuant to the *NARUC I* analysis.[42] Similarly, Inmarsat agrees that gateway earth station service is not generally made available to end users or the public directly for interconnection to the public switched telephone network, and thus would be regulated properly on a non-common carrier basis. [43]

2. System License and License Term

As the Commission notes, the life span of a GSO satellite is 15 years or more.[44] In order to avoid re-licensing the same satellite at the end of a 10 years and the needless regulatory burden entailed therein, Inmarsat suggests that licenses for GSO MSS systems

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[40] NPRM at ¶25.
[41] NPRM at ¶74.
[42] Id., citing National Association of Regulatory Utility Commissioners v. FCC, 525 F.2d 630, 642 (D.C. Cir. 1976), cert. denied, 425 U.S. 999 (*NARUC I*).

be granted for either a period of 15 years, or for the actual lifespan of the satellite on a case by case basis. The Commission correctly notes that it has the discretion to take this action pursuant to statutory changes made under the 1996 Telecommunications Act. [45]

3. Implementation Milestones

Inmarsat supports the milestone schedules identified by FCC in the NPRM.[46] As stated above, adherence to the milestone requirements is crucial to effective management of the 2 GHz spectrum. However Inmarsat believes that the interim milestones suggested by the Commission such as certification of completion of Critical Design Review[47] may not be of much utility and would only represent an additional reporting burden on system operators.

4. Mobile Earth Station Licensing

Inmarsat generally supports the proposed MES licensing arrangements including considering 2 GHz MESs to be part of GMPCS. [48] However, Inmarsat believes that, while requiring MESs to be tunable over all portions of the 2 GHz bands may be a good idea in theory,[49] tunability is basically limited by space segment considerations. Larger bandwidth requirements would increase the digital processor complexity. Inmarsat estimates that a 30 MHz range is about the practical limit of technology today. Thus, Inmarsat opposes adoption of any requirements in this respect. Rather, Inmarsat believes, if market conditions dictate that MESs be able to communicate over a larger portion of the MSS band, manufacturers will develop such equipment if it is technically feasible.

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[43] NPRM at ¶77.
[44] NPRM at ¶80.
[45] Id.
[46] NPRM at ¶83 et seq.
[47] NPRM at ¶87.
[48] NPRM at ¶107.
[49] Id.

5. Exclusionary Arrangements

Inmarsat supports the prohibition by the FCC of exclusionary arrangements which cause a single satellite system to be the only permissible facility through which to obtain a particular satellite service between the United States and a foreign country.[50] As the Commission notes, such prohibition will help to ensure that markets worldwide will be open to all 2 GHz MSS operators.[51] In markets where competition for specific services exists, however, the Commission should not be concerned with exclusive arrangements between a satellite system operator and a particular service provider.

6. International Coordination

As noted above and in the NPRM, this proceeding represents the first Commission rulemaking directly involving the assignment of spectrum for use by systems licensed under foreign administrations.[52] The Commission seeks comment on the approach it should take regarding international coordination issues in light of this.

As an initial matter, Inmarsat believes that in granting spectrum to a foreign-licensed system in a processing round, either through issuance of a new license or through the letter of intent procedure outlined in *DISCO II*, the Commission must satisfy itself as to all issues of inter-system coordination of that system for domestic operation within the United States. Thus, there should be no further concerns regarding coordination of domestic MSS operations among licensees and authorized foreign service providers. Similarly, with respect to inter-service domestic coordination, in this case

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[50] NPRM at ¶103.
[51] Id.

between MSS and incumbent BAS operators, the conditioning of access to MSS frequencies by satellite licensees on relocation of the incumbent services would apply equally to both foreign and domestic MSS operators. For instance, any sharing arrangement between MSS and incumbent FS users would be a matter of private negotiation between the parties.

With respect to international coordination issues, Inmarsat again stresses that the most expedient way for the Commission to ensure satisfactory global coordination of U.S. systems is through its efforts to assign MSS spectrum in a manner which maximizes harmonization with other such allotments around the world. Inmarsat agrees with the Commission's belief that compatibility of U.S. and European plans, for example, could benefit the public by speeding rapid implementation of services.[53] To this end, Inmarsat urges the Commission to adopt a spectrum sharing plan that would permit allocations for global systems generally in line with the ERC decision as proposed in Annex 1 hereto. A globally harmonized allocation decision would encourage seamless operation of global MSS networks and undoubtedly would facilitate international coordination agreements for both U.S. and foreign systems.

7. Interservice Sharing

Finally, the Commission seeks comment on a number of inter-service sharing and out of band interference issues.[54] With respect to the relationship between unwanted out of band emissions from 2 GHz mobile earth stations and aeronautical radionavigation services,[55] Inmarsat believes Commission policy should not be dictated by the GNSS

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[52] NPRM at ¶110.
[53] NPRM at ¶111.
[54] NPRM at ¶112 et seq.
[55] NPRM at ¶116.

considerations since there is a rather large frequency separation available. However, as noted by the Commission, the relevant ITU-R Recommendations on this subject can be applied readily, if necessary to satisfy industry concerns.[56] Thus, Inmarsat believes that no additional provisions regarding unwanted emissions may be necessary for 2 GHz MSS systems under this proceeding.

With respect to MDS operations at 2150-2165 MHz and MSS downlink at 2165-2200 MHz, Inmarsat does not believe that the interference from MDS operations in 2150-2165 MHz band would actually dictate a preference for allocating the 2165-2170 MHz band to GSO MSS systems' downlinks as suggested by the Commission. Rather, Inmarsat believes that the interference effects would be the same into a non-GSO MES as to a GSO MES.

[56] Id.

III. CONCLUSION

Inmarsat anticipates that the Commission will establish policies and service rules for the 2 GHz band that promote efficient and equitable competition in the provision of new MSS services to the public. To this end, Inmarsat urges the Commission to issue such rules and policies in accordance with the comments of Inmarsat set forth above.

Respectfully submitted,

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ANNEX I

PROPOSED ALTERNATIVE FLEXIBLE BAND ARRANGEMENT

FOR 2 GHZ MSS ALLOCATIONS

UPLINK BAND (1990-2025 MHz)

- 1990-1995 MHz for CDMA
- 1995-2000 MHz for TDMA/GSO
- 2000-2005 MHz Expansion spectrum
- 2005-2010 MHz for TDMA/NGSO
- 2010.0-2012.5 MHz for TDMA/NGSO
- 2012.5-2015 MHz Expansion spectrum
- 2015-2017.5 MHz for TDMA/GSO
- 2017.5-2020.0 MHz for CDMA
- 2020-2025 MHz Expansion spectrum or reserved for Region 2 GSO

DOWNLINK BAND (2165-2200 MHz)

- 2165-2170 MHz Expansion spectrum or reserved for Region 2 GSO
- 2170.0-2172.5 MHz for TDMA/NGSO
- 2172.5-2175.0 MHz Expansion spectrum
- 2175.0-2177.5 MHz for TDMA/GSO
- 2177.5-2180 MHz for CDMA
- 2180-2185 MHz for CDMA
- 2185-2190 MHz for TDMA/GSO
- 2190-2195 MHz Expansion spectrum
- 2195-2200 MHz for TDMA/NGSO

Technical Certification

I, RAM MANOHAR hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in these Comments and attachments hereto, that I am familiar with Part 25 of the Commission's Rules, that I have either prepared or reviewed the engineering information submitted in these Comments and attachments hereto, and that it is complete and accurate to the best of my knowledge.

By: RManohar.

Date 24.6.99

Name RAM MANOHAR
Title MANAGER, SPECTRUM
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CERTIFICATE OF SERVICE

I, Robert L. Galbreath, hereby certify that copies of the attached Comments of Inmarsat Ltd., were served on June 24, 1999, via hand delivery, on the following parties:

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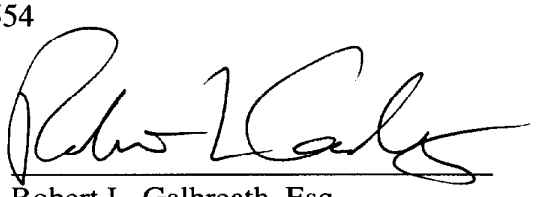

Robert L. Galbreath, Esq.